CLAIMS

WHAT IS CLAIMED IS:

1. A carrier signal modulated with an augmented Fibre Channel (FC) frame that comprises:

a start-of-frame field;

a supplementary header field that follows the start-of-frame field;

a frame header field that follows the supplementary header field;

a cyclic redundancy code (CRC) checksum field; and

an end-of-frame field that follows the CRC checksum field.

2. The carrier signal of claim 1, wherein the augmented FC frame further comprises:

a data field that follows the frame header field and precedes the CRC checksum field.

3. The carrier signal of claim 1, wherein the supplementary header field includes:

a destination tag that identifies a target fabric to which the augmented FC frame is directed.

4. The carrier signal of claim 1, wherein the supplementary header field includes:

a source tag that identifies an originating fabric of the augmented FC frame.

5. The carrier signal of claim 1, wherein the supplementary header field includes:

an egress port identifier that identifies a switch port through which the augmented FC frame or its non-augmented counterpart is to exit a switch.

6. The carrier signal of claim 1, wherein the supplementary header field includes:

a filter suppression flag that indicates whether additional filtering operations would be duplicative.

7. The carrier signal of claim 1, wherein the supplementary header field includes:

a special frame flag that indicates whether the augmented FC frame is non-compliant with a predetermined format.

8. The carrier signal of claim 1, wherein the supplementary header field includes:

a priority flag that indicates whether retransmission of the FC frame should be expedited.

9. The carrier signal of claim 1, wherein the supplementary header field includes:

a virtual channel field that identifies a virtual channel by which the augmented FC frame or its non-augmented counterpart is to exit a switch.

10. The carrier signal of claim 1, wherein the supplementary header field includes:

a version field that indicates a format of the supplementary header field.

11. A switching circuit that comprises:

a port module having two or more ports;

a data storage module configured to receive augmented FC frames from the port module; and

a control module configured to determine outgoing ports for augmented FC frames entering the data storage module,

wherein the data storage module forwards augmented FC frames to corresponding outgoing ports in the port module as determined by the control module.

12. The switching circuit of claim 11, wherein each augmented FC frame includes a supplementary header having a destination tag field for indicating a target fabric.

13. The switching circuit of claim 12, wherein the control module is configured to determine routing information for the augmented FC frames in multiple ways, and wherein one of the ways is a determination based on the destination tag field.

14. The switching circuit of claim 13, wherein a second of the multiple ways is a determination based on a source identifier and a destination identifier, and wherein the routing information determined from the second of the multiple ways includes a value for the destination tag field.

15. The switching circuit of claim 14, wherein the control module employs the first way of determining routing information only if the augmented FC frame is received via a port module port that is configured to receive augmented FC frames, and wherein the control module employs the second way of determining routing information if the augmented FC frame is received via a port module port that is configured to receive non-augmented FC frames.

16. The switching circuit of claim 11, wherein each augmented FC frame includes a supplementary header having an egress port identifier field for identifying a port through which the frame will exit a switch.

17. The switching circuit of claim 16, wherein the control module is configured to determine routing information for the augmented FC frames in multiple ways, and wherein one of the ways is a determination based on the egress port identifier field.

18. The switching circuit of claim 17, wherein a second of the multiple ways is a determination based on a source identifier and a destination identifier, and wherein the routing information determined from the second of the multiple ways includes a value for the egress port identifier field.

19. The switching circuit of claim 18, wherein the control module employs the first way of determining routing information only if the augmented FC frame is received via a port module port that is configured to receive augmented FC frames, and wherein the control module employs the second way of determining routing information if the augmented FC frame is received via a port module port that is configured to receive non-augmented FC frames.

20. The switching circuit of claim 11, wherein outgoing ports that are configured to receive non-augmented FC frames are further configured to drop supplementary headers from augmented FC frames while transmitting.

21. The switching circuit of claim 11, wherein the control module is configured to perform filtering operations on augmented FC frames entering the data storage module, and wherein the control module is further configured to bypass the filtering operations for augmented FC frames having an asserted suppress filter flag.

22. A network that comprises:

a first switching circuit having two or more ports, at least one of which is configured to transmit and receive augmented FC frames;

a second switching circuit having two or more ports, at least one of which is configured to transmit and receive augmented FC frames; and

a communications path to transport augmented FC frames between said at least one port of the first and second switching circuit,

wherein the augmented FC frames transported from the first switching circuit to the second switching circuit each include a supplementary header having routing information determined by the first switching circuit, and

wherein the second switching circuit routes the augmented FC frame based on the routing information in the supplementary header.

23. The network of claim 22, wherein the communications path is a single link.

24. The network of claim 22, wherein the communications path includes multiple links and at least one intermediate switching circuit.

25. The network of claim 22, wherein the supplementary header includes a destination tag to identify a target fabric.

26. The network of claim 22, wherein the supplementary header includes an egress port identifier to identify an outgoing port of the second switching circuit.

27. The network of claim 22, wherein the supplementary header includes a filter suppression flag, and wherein the second switching circuit suppresses any filtering operations when the filter suppression flag is asserted.

28. The network of claim 22, wherein the supplementary header includes a field to specify a virtual channel, and wherein the second switching circuit associates the augmented FC frame with the specified virtual channel as the frame exits the second switching circuit.

29. The network of claim 22, wherein at least one port of the first switching circuit is associated with a first fabric, and wherein at least one port of the second switching circuit is associated with a second, different fabric.

30. The network of claim 29, wherein the first and second fabrics have a common destination identifier that is associated with different end nodes in the first and second fabrics.

31. A frame routing method in a system that includes at least two switching circuits, where the method comprises:

receiving a FC frame at a first switching circuit;

using a destination identifier from the FC frame to determine routing information associated with the FC frame;

augmenting the FC frame with a supplementary header that includes at least some of the routing information;

sending the augmented FC frame to the second switching circuit; and

routing the augmented FC frame at the second switching circuit in accordance with the routing information in the supplementary header.

32. The method of claim 31, wherein said augmenting includes placing the supplementary header between a start-of-frame field in the FC frame and a frame header field in the FC frame.

33. The method of claim 31, wherein the routing information in the supplementary header includes a destination tag that identifies a target fabric to which the augmented FC frame is directed.

34. The method of claim 31, wherein the supplementary header includes a source tag that identifies an originating fabric of the augmented FC frame.

35. The method of claim 31, wherein the routing information in the supplementary header includes an egress port identifier that identifies a switch port through which the augmented FC frame or an FC standard-compliant counterpart is to exit the second switching circuit.

36. The method of claim 31, wherein the supplementary header includes a filter suppression flag that inhibits filtering operations by the second switching circuit.

37. The method of claim 31, wherein the supplementary header includes a special frame flag that inhibits error checking by the second switching circuit.

38. The method of claim 31, wherein the supplementary header includes a priority flag that indicates whether the second switching circuit should expedite retransmission of the augmented FC frame.

39. The method of claim 31, wherein the routing information in the supplementary header includes a virtual channel field that identifies a virtual channel by which the augmented FC frame or an FC standard compliant counterpart is to exit a switch.

40. The method of claim 31, wherein the supplementary header field includes a version field that indicates a format of the supplementary header field.